

NOSB NATIONAL LIST FILE CHECKLIST

PROCESSING

MATERIAL NAME: **Kaolin (clay type) & Bentonite**

CATEGORY: **Non-agricultural**

Complete?: _____

✓

NOSB Database Form

✓

References

✓

MSDS (or equivalent) X2

✓

FASP (FDA) (Bentonite)

✓

Date file mailed out: 1/8/95

✓

TAP Reviews from: _____

Richard Thayer

Supplemental Information:

MISSING INFORMATION: _____

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material Kaolin (clay type) & Bentonite

Type of Use: _____ Crops; _____ Livestock; ✓ Processing

TAP Review by:

1. Richard Thayer

2. _____

3. _____

Comments/Questions:

My Opinion/Vote is:

Signature _____ **Date** _____

1.

USDA/TAP REVIEWER
COMMENT FORM

Original mailing date: 14 Feb 1995.

Material: Clays

Kaolin (China clay) 21CFR186.1256
Bentonite 21CFR184.1155

Reviewer: Richard C. Theuer

NATURAL

Kaolin and bentonite are natural clays. Kaolin occurs in largely deposits of relatively pure kaolinite. Clays consist of alumina, silica and water. Clay can calcined in a kiln to produce a fine powder. The fine particles provide large total surface area and, hence, pronounced adsorptive capability.

COMMENTS RE SECTION 2119(m) CRITERIA:

1. Clay is a natural material. It is mined resource. Mining usually has negative environmental impact.
 2. Bentonite is used as a processing aid, not as an ingredient.
 3. Current good manufacturing practice for bentonite results in no significant residue in the food.
 4. Clay has no human toxicity at low levels of intake. Geophagia (excessive intakes of clay), particularly during pregnancy, can cause iron deficiency anemia.
 5. Kaolin is allowed as a GRAS indirect human food ingredient. It is used in the manufacture of paper and paperboard that contact food.
-

The following natural substances should be allowed in the processing or packaging of organic foods. They should not be added to the National List of natural substances prohibited for use as ingredients or processing aids in Organic Food:

clays: kaolin
 bentonite

12 Mar 1995

NOSB Materials Database

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Identification

Common Name	Kaolin (Clay) & Bentonite	Chemical Name
Other Names	China clay, argilla; also Bentonite	
Code #: CAS		Code #: Other
N. L. Category	Non-agricultural	MSDS <input checked="" type="radio"/> yes <input type="radio"/> no

Chemistry

Family	
Composition	Kaolin is a purified clay consisting mainly of alumina, silica, and water. Bentonite is a porous rock of clay minerals derived from weathered volcanic ash or tuff.
Properties	A fine, white to yellowish white or grayish aluminum silicate clay with low shrink-swell potential. It becomes darker and has a distinct claylike odor when moistened. Insoluble in water, in alcohol, in dilute acids, and in alkali solutions.
How Made	Mined. Can be calcined in a kiln to produce a fine powder. Natural.

Processing

Use/Action

Type of Use	
Specific Use(s)	Kaolin: Anticaking agent. Bentonite: clarifying or refining wines and fruit juices. Processing aid; not present in final product.
Action	Large total surface area creates pronounced adsorptive capability.
Combinations	

Status

OFPA
N. L. Restriction
EPA, FDA, etc
Directions
Safety Guidelines
State Differences
Historical status
International status

OFPA Criteria

2119(m)1: chemical interactions Not Applicable

2119(m)2: toxicity & persistence Not Applicable

2119(m)3: manufacture & disposal consequences

Similar to other mining operations.

2119(m)4: effect on human health

Kaolin is GRAS and clays do not have any human toxicity at low intake levels.

2119(m)5: agroecosystem biology Not Applicable

2119(m)6: alternatives to substance

unknown.

2119(m)7: Is it compatible?

References

AU: Permual,-D.; Le-Patourel,-G.

TI: Small bin trials to determine the effectiveness of acid-activated kaolin against four species of beetles infesting paddy under tropical storage conditions.

SO: J-Stored-Prod-Res. Exeter : Pergamon Press. July 1992. v. 28 (3) p. 193-199.

CN: DNAL 421-J829

AB: Control of populations of *Rhyzopertha dominica*, *Sitophilus oryzae*, *Tribolium castaneum* and *Oryzaephilus surinamensis* infesting paddy treated with acid-activated kaolin (AAK) at 0.75% w/w or with pirimiphos-methyl (PM) diluted with AAK to give 2 mg PM/kg paddy was compared with that in untreated paddy or paddy admixed with a 2% PM dust formulation on tale at 8 mg a.i./kg. All three treatments controlled adult populations of the insects up to 200 days post-treatment, but *R. dominica* populations started to increase at 250 days in the treatment using 2% PM dust, and this treatment gave progressively lower mortality of *R. dominica* and less suppression of progeny development in 7 day bioassays using samples taken through the trial than the other treatments.

UD: 9112

TI: Phenolic compounds and polyphenoloxidase in relation to browning in grapes and wines.

XAU: Universite Montpellier, Montpellier, France.

UD: 8906

TI: Adsorption of protein by bentonite in a model wine solution.

DE: wines-. protein-content. winemaking-residues. adsorption-. bentonite-. temperature-. ethanol-. ph-. cation-exchange-capacity. solutions-. purification-. food-processing.

UD: 8902

TI: A comparison of the use of chitosan and gelatin on the clarification of five blends of apple juice using both hot and cold treatment methods.

DE: apple-juice. food-processing. clarification-. gelatin-. chitosan-. bentonite-. color-.

AU: Dawes,-H.; Struebi,-P.; Boyes,-S.; Heatherbell,-D.

TI: Kiwifruit proteins: characterization and removal during processing of clarified juice.

SO: Acta-Hortic. Wageningen : International Society for Horticultural Science. Apr 1992. v. 2 (297) p. 667-674.

CN: DNAL 80-AC82

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: KAOLIN

FORMULA: $AL_2O_3 \cdot 2SiO_2 \cdot 2H_2O$

FORMULA WT: .00

CAS NO.: 01332-58-7

COMMON SYNONYMS: KAOLINITE; CHINA CLAY; BOLUS ALBA; PORCELAIN CLAY

PRODUCT CODES: 2242, 2240

EFFECTIVE: 06/30/86

REVISION #02

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 0 NONE

FLAMMABILITY - 0 NONE

REACTIVITY - 0 NONE

CONTACT - 1 SLIGHT

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT: SAFETY GLASSES; LAB COAT

PRECAUTIONARY LABEL STATEMENTS

CAUTION

MAY CAUSE IRRITATION

DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
KAOLIN	90-100	1332-58-7

3 - PHYSICAL DATA

BOILING POINT: N/A

VAPOR PRESSURE(MM HG): N/A

MELTING POINT: N/A

VAPOR DENSITY(AIR=1): N/A

SPECIFIC GRAVITY: 2.60

EVAPORATION RATE: N/A

(H₂O=1)

(BUTYL ACETATE=1)

SOLUBILITY(H₂O): NEGLIGIBLE (LESS THAN 0.1 %) % VOLATILES BY VOLUME: 0

APPEARANCE & ODOR: WHITE TO YELLOWISH OR GRAY POWDER.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP) N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

5 - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): 10 MG/M3 (PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 20 MG/M3 (PPM)

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO
EFFECTS OF OVEREXPOSURE

INHALATION OF DUST MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT.
PROLONGED CONTACT MAY CAUSE SKIN IRRITATION.

TARGET ORGANS: NONE IDENTIFIED

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: NONE INDICATED

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE
LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED
PERSON TO FRESH AIR. GET MEDICAL ATTENTION.

EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15
MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST
15 MINUTES.

6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE DOCUMENTED

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.
DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL
ENVIRONMENTAL REGULATIONS.

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION
TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS ABOVE 10 MG/M3, A DUST/MIST RESPIRATOR IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY CHEMICAL STORAGE AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

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MATERIAL SAFETY DATA SHEET

BENTONITE

SECTION I - Product Identification

PRODUCT NAME: BENTONITE
COMPANY NAME: SIGMA CHEMICAL COMPANY
DATE: 10/13/87
EMERGENCY TELEPHONE: (314) 771-5765
RTECS: CT9450000
CAS #: 1302-78-9
SYNONYMS: NDA

SECTION II - Hazardous Components

NA

SECTION III - Physical Data

MP: NDA
BP: NDA
APPEARANCE & ODOR: POWDER

SECTION IV - Fire and Explosion Hazard Data

EXTINGUISHING MEDIA:

WATER SPRAY.

CARBON DIOXIDE, DRY CHEMICAL POWDER, ALCOHOL OR POLYMER FOAM.

SPECIAL FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NDA

SECTION V - Health Hazard Data

ACUTE EFFECTS: MAY BE HARMFUL BY INHALATION, INGESTION, SKIN ABSORPTION.
CAUSES EYE AND SKIN IRRITATION.

CAUSES IRRITATION TO MUCOUS MEMBRANES, UPPER RESPIRATORY TRACT.

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL/PHYSICAL/TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

FIRST AID PROCEDURES:

IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES; ASSURE ADEQUATE FLUSHING BY SEPARATING EYELIDS WITH FINGERS.

IF INHALED, REMOVE TO FRESH AIR.

IF BREATHING IS DIFFICULT, CALL A PHYSICIAN.

INGESTION: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
CALL A PHYSICIAN !!!

CONTAMINATED CLOTHING & SHOES: REMOVE

SECTION VI - Reactivity Data

STABILITY: STABLE

HAZARDOUS COMBUSTION:

NATURE OF DECOMPOSITION PRODUCTS NOT KNOWN

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

7
INCOMPATIBILITIES:
NDA

SECTION VII - Spill and Disposal Procedures

SPILLED MATERIAL: EVACUATE AREA. SHUT OFF ALL SOURCES OF IGNITION.
WEAR CHEMICAL SAFETY GOGGLES, RUBBER BOOTS, HEAVY RUBBER GLOVES.
WEAR SELF-CONTAINED BREATHING APPARATUS.
AVOID RAISING DUST.
VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
SWEEP UP OR PICK UP & PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
DISPOSAL: INCINERATOR
CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

SECTION VIII - Protective Equipment

EYES: SAFETY GOGGLES
SKIN: CHEMICAL RESISTANT GLOVES, CLOTHING
VENTILATION: MECHANICAL EXHAUST
RESPIRATOR: NIOSHA/MSHA-APPROVED RESPIRATOR
OTHER: SAFETY SHOWER AND EYE WASH.
FULL PROTECTIVE CLOTHING.

SECTION IX - Storage and Handling Precautions

STORAGE PRECAUTIONS: DO NOT GET IN EYES, SKIN, CLOTHING. DO NOT PIPET BY MOUTH.
DO NOT BREATHE VAPOR.
KEEP TIGHTLY CLOSED.
WASH THOROUGHLY AFTER HANDLING.
WATER AND SEEK MEDICAL ADVICE.
WEAR SUITABLE PROTECTIVE CLOTHING.
STORE IN A COOL DRY PLACE.

SECTION X - Transportation Data and Additional Information

TOXICITY DATA:
ORL-RAT LD50 (MG/KG): NDA
IHL-RAT LD50 (MG/KG): NDA
SCU-RBT LD50 (MG/KG): NDA
ORL-HMN LDLO (MG/KG): NDA

(TM) and (R) : Registered Trademarks

N/A = Not Applicable OR Not Available

The information published in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.

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U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

BANTONITE

AS#: 001302789 HUMAN CONSUMPTION: 3.4039 MG/KG BW/DAY/PERSON
ASP#: 1754 MARKET DISAPPEARANCE: 4016666.666 LBS/YR
EPE: ASP MARKET SURVEY: 87
AS#: 0028 JECFA: JECFA ADI:
EPA#: JECFA ESTABLISHED:
CAS#: LAST UPDATE: 931015

4: DENSITY: LOGP:

STRUCTURE CATEGORIES: C51

COMPONENTS:

SYNONYMS:

CHEMICAL FUNCTION: G

TECHNICAL EFFECT: DOUGH STRENGTHENER
FLOUR TREATING AGENT
OXIDIZING OR REDUCING AGENT
PROCESSING AID
STABILIZER OR THICKENER

FR REG NUMBERS: 184.1155 175.105 175.300
176.170

MINIMUM TESTING LEVEL: 3

COMMENTS: STUDIES 2 TO 4 FROM SCOGS-90

OX 4A: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE RAT OR MOUSE STUDIES

STUDY: 3 COMPLETENESS: RANKING FACTOR: 4.538E-5
SPECIES: MOUSE LEL: 75000 MG/KG BW/DAY
EFFECTS: BODY WEIGHT DECREASE
FATTY INFILTRATION
LIVER
LIVER

COMMENTS: DATA FROM SCOGS-90

OCNUM=1754

OX 4C: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE STUDIES

TUDY: 3 COMPLETENESS: RANKING FACTOR: 4.538E-5
PECIES: MOUSE
FFECTS: BODY WEIGHT DECREASE
ITES: FATTY INFILTRATION
OMMENTS: DATA FROM SCOGS-90

OX 7: ACUTE TOXICITY INFORMATION

TUDY: 1
PECIES: RAT
SOURCE: CMF 000009 43:011422
YEAR: 1970
LD50: 5000 MG/KG BW
OMMENTS: STUDY 1 LD50 > 5000 MG/KG
MALES ONLY

OX 9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

TUDY: 2 COMPLETENESS: SOURCE: CAN J BIOCHEM PHYSIOL
YPE: SHORT TERM
PECIES: RAT
URATION: 28 DAYS
FFECTS: HISTOPATHOLOGY OBSERVATION(S) NOT ELSEWHERE CLASSIFIED
ITES: LIVER
OMMENTS: ANIMALS PREVIOUSLY ON VITAMIN A DEFICIENT DIET
VITAMIN A ADSORBED TO BENTONITE
TEST COMPOUND SODIUM BENTONITE
DECREASED LEVEL OF VITAMIN A IN THE LIVER
NOT USED FOR PRIORITY RANKING

TUDY: 3 COMPLETENESS: SOURCE: J NATL CANCER INST 14:57-63
YPE: SHORT TERM
PECIES: MOUSE
URATION: 60 DAYS
FFECTS: BODY WEIGHT DECREASE
ITES: FATTY INFILTRATION
OMMENTS: ANIMALS DEVELOPED SIGNS OF DECREASED CHOLINE DEFICIENCY
EFFECT DUPLICATED IN 1965 RUSSIAN STUDY OF UNKNOWN DURATION

OX 3: GENETIC TOXICITY STUDIES

NOSB NATIONAL LIST FILE CHECKLIST

PROCESSING

MATERIAL NAME: **Yeast, smoked**

CATEGORY: **Non-agricultural**

Complete?: _____

✓

NOSB Database Form

✓

References

✓

MSDS (or equivalent)

✓

FASP (FDA)

Date file mailed out: 2/6/95

✓

TAP Reviews from: Mark Schwartz

✓

Supplemental Information:

Dictionary of Additives
Letter from Baker Yeast

MISSING INFORMATION: another TAP review from Rich Thayer

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material Yeast smoked

Type of Use: _____ Crops; _____ Livestock; ✓ Processing

TAP Review by:

1. Mark Schwartz
2. _____
3. _____

Comments/Questions:

My Opinion/Vote is:

Signature **Date**

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: 6 Feb

Name of Material: Yeast, smoke

Reviewer Name: Mark Schwartz

Is this substance Natural or Synthetic? Explain (if appropriate)

Natural

Please comment on the accuracy of the information in the file:

Very good

This material should be added to the National List as:

 Synthetic Allowed ✓ Prohibited Natural

or, This material does not belong on the National List because:

Depending on substrate used to grow yeast and source of smoke flavor

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

Not as a supplement source

Any additional comments or references?

Signature Mark L Schwartz Date 2/24/95

Identification

Common Name	Yeast, smoked	Chemical Name	
Other Names	Bakon Yeast, Hickory Smoked Yeast, Smoked Torula Yeast		
Code #: CAS		Code #: Other	
N. L. Category	Non-agricultural	MSDS	<input type="radio"/> yes <input checked="" type="radio"/> no

Chemistry

Family	
Composition	Cells of dried Torula Yeast solely impregnated with 100% sweet hickory wood smoke. 45% Protein, 1% Fat, 4% Crude Fiber, 22.4% Carbohydrates, 9% Minerals. See attached "General Specifications for Bakon Yeast".
Properties	Uniform light tan color yeast with characteristic smoked odor and taste.
How Made	Torula yeast is grown on a carbon source, usually a vegetable derived carbohydrate such as corn or molasses, or on wood pulp. Resulting "yeast cream" is spray-dried under conditions which make it stable and non-fermenting. 100% Hickory smoke added to flavor.

Processing

Use/Action

Type of Use	
Specific Use(s)	Adds bacon-like taste to foods as well as vitamins and protein. Enhances meat flavors and masks soy taste in extended meat products. Used in soups, cheese spreads, crackers and snack foods.
Action	Provides flavoring when added as ingredient to foods.
Combinations	

Status**OFPA**

N. L. Restriction	Yeasts grown on petroleum for this purpose should not be allowed.
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EPA, FDA, etc

Directions

Safety Guidelines

State Differences

Historical status	yeasts generally accepted as approved non-organic ingredients.
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International status

NOSB Materials Database

4.

OFPA Criteria

2119(m)1: chemical interactions Not Applicable

2119(m)2: toxicity & persistence Not Applicable

2119(m)3: manufacture & disposal consequences

Possibly from petroleum grown yeasts.

2119(m)4: effect on human health

Ingestion of nucleic acids in yeast increases blood level of uric acid which may cause gout. Daily intake of inactive dry yeast should be limited to 20 grams/day. Contains naturally-occurring glutamic acid.

2119(m)5: agroecosystem biology Not Applicable

2119(m)6: alternatives to substance

Smoked meats: i.e. bacon, ham, etc.

2119(m)7: Is it compatible?

References

"General specifications for Bakon Yeast" (attached)

Dictionary of Additives: "yeasts" (attached)

GENERAL SPECIFICATIONS FOR BAKON YEAST™

Bakon Yeast is a pure vegetable-derived product that adds a unique bacon-like taste to foods, as well as natural vitamins and protein. This product is a dry stable powder consisting of the cells of dried Torula Yeast solely impregnated with 100% sweet hickory wood smoke by the Bakon process. Bakon Yeast also enhances meat flavors and masks soy taste in extended meat products. Because of its natural nucleotide, glutamic acid, and soluble amino acid content; Bakon improves food flavors.

PHYSICAL DATA

Process Used: The original patented BAKON YEAST PROCESS with all the subsequent improvements made by the original inventor.

Odor : Characteristic, closely resembles that of smoked bacon or ham.

Taste : Characteristic, imparts a delightful bacon-like hickory smoked taste.

Color : Bakon Yeast has a uniform light tan color.

TYPICAL ANALYSIS

Protein (N x 6.25)	>45.0%
Fat (ether extract)	1.0%
Crude Fiber	4.0%
Carbohydrates (by difference)	22.4%
Moisture	<7.0%
Minerals	9.0%
Natural Lecithin	4.5%
pH	6.0%
Sulfite	<1 ppm

MICROBIOLOGICAL SPECIFICATIONS

Total Plate Count, max	7,500/g
Yeast and Mold, max	50/g
Coliforms, max	10/g
E. Coli	Negative
Salmonella	Negative
Staphylococcus aureus	Negative

TYPICAL VITAMIN ANALYSIS (mg/100 g)

Thiamine	0.7	Folic Acid (total) ..	0.6
Riboflavin	4.1	PANA	0.8
Pyridoxine HCl	2.1	Inositol	450.0
Pantothenic Acid ...	11.3	Choline Chloride ...	580.0
Biotin	0.05	Vitamin B12	0.0001
Niacin	49.2		

TYPICAL AMINO ACID ANALYSIS (g/16 g N)

Lysine	8.7	Alanine	5.2
Histidine	2.1	Cystine	0.7
Arginine	5.5	Valine	4.3
Aspartic Acid ...	8.5	Methionine	1.2
Threonine	4.9	Isoleucine	4.3
Serine	4.4	Leucine	6.7
Glutamic Acid ...	16.3	Tyrosine	3.2
Proline	2.9	Phenylalanine	4.1
Glycine	4.3	Tryptophan	1.0

INGREDIENTS

Inactive Dried Food Yeast and Sweet Hickory Filtered Smoke

AVAILABLE GRADES

Type SFBN - Regular Smoke Strength

Type HFBN - Heavy Smoke Strength

PACKAGING

150# lever-loc fiber drums with poly liner (net weight)

LABELING

"SMOKED YEAST" is the commonly accepted ingredient designation in label statements. Since Bakers Yeast is a 100% genuine hickory - smoked product, "HICKORY SMOKED YEAST" may also be used.

STORAGE

Storage under cool and dry conditions is recommended. Avoid storage at elevated temperatures for prolonged period of time. Drums should be kept sealed and dry. Shelf life: 1 to 2 years in unopened bag stored as recommended.

ORDERING

Rhinelanders, Wisconsin: Phone/Fax: 715-362-6533

or

Barrington, Illinois: Phone/Fax: 708-381-5912

We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combination for their own purposes. Unless otherwise agreed in writing, we sell the products without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of our products, whether used alone or in combination with other products.



BAKON YEAST
INCORPORATED

TO WHOM IT MAY CONCERN:

The products and packaging materials comprising each shipment or other delivery hereafter made by Bakon Yeast Inc., are hereby guaranteed, as of the date of each such shipment or delivery, to be, on that date, not adulterated or misbranded within the meaning of the Federal Food, Drug and Cosmetic Act, as amended; and not articles which may not, under the provisions of Section 404 or 505 of the Act, be introduced into interstate commerce.

Our basic product is Primary Grown Dried Torula Yeast, as identified in the National Formulary XIX as "Torula Dried Yeast". Torula Dried Yeast is grown strictly on a vegetable-derived derivative (corn). A strain of yeast called "Torulopsis utilis" is used to consume only the corn sugars. The resulting so-called "yeast cream" is spray dried under conditions which make it stable and non-fermenting.

To this yeast, we only add 100% hickory smoke obtained by actually burning hickory chips and impregnating the yeast particle therewith. We use approximately the same smoking equipment as do meat packers to smoke ham, bacon, sausages, etc.; except that we filter out any tars or resins that might be contained in the natural hickory smoke before mixing with the yeast. NO MEAT PRODUCTS, LIQUID SMOKE OR OTHER ARTIFICIAL FLAVORINGS ARE USED - AND ABSOLUTELY NO COLORING MATERIAL OF ANY CHARACTERISTIC IS EVER ADDED. In other words, Bakon Yeast is simply a mixture of sweet hickory filtered smoke & Dried Torula Yeast!

P.O. Box 651, Rhineland, Wi. 54501 - Tele. 715-362-6533

YEASTS*

582 DICTIONARY OF ADDITIVES

Baker's Yeast; Brewer's Yeast; Dried Yeast; Smoked Yeast;
Torula Yeast

Yeast, a type of fungus, is produced or grown by the fermentation of carbohydrates. The yeast used in food may be *baker's yeast*, a strain of *Saccharomyces cerevisiae* used in breadmaking and producing the leavening effect of copious amounts of gaseous carbon dioxide; *brewer's yeast* (a different strain

which produces greater amounts of alcohol in fermenting sugar, but is not effective in leavening), which is obtained as a by-product from the fermentation of beer made from cereal and hops (after removal of the bitter material derived from hops); or *torula yeast* (*Candida* species), which is obtained from cultures grown on molasses, the carbohydrate residues of papermaking from wood pulp, or more recently, petroleum. *Dried yeast* consists of the dry cells of any suitable yeast fungi, usually from brewer's yeast. It is high in protein (45 percent), and is rich in many of the B vitamins. It is also high in nucleic acids, and this has limited use of yeast as a major protein source. *Smoked yeast* is used as a flavoring agent in soups, cheese spreads, crackers, and snack foods; it is prepared by exposing dried yeast to wood smoke.

Yeasts are useful in foods as dough conditioners and leavening agents in baked goods; as a fermenting aid, particularly for alcoholic beverages; in formulating flavors in soup mixes, gravies, and other foods; and in providing nutrients.

SAFETY: In 1975 yeast used in food processing averaged 545 milligrams per person in the daily diet. Dried yeast approximated a tenth of the total. Smoked yeast flavoring had an average daily consumption of 4 milligrams per person in 1978.

In earlier years, yeast was used as a dietary source of vitamins. Today pure vitamins are available at much lower cost, so the use of yeast as a nutrient is primarily for its protein value. A high-lysine baker's yeast has been suggested as a protein supplement to improve the nutritional quality of cereal foods, which tend to be limited in lysin (see p. 475). Yeast also has enhanced the nutritional benefit to humans of several kinds of formulation of vegetable protein mixtures. The usefulness of yeast as a diet supplement has been demonstrated many times during the past decades: at levels up to 10 percent of yeast in the diet, weight gain has increased and the nutritive value of the dietary protein has improved. Many thousands of tons of yeast were used as meat substitutes and to extend meat, and in army rations in Germany, Russia, and Japan during World War II.

In humans, the nucleic acids in yeast are converted to uric acid when metabolized in the body. A large excess of uric acid can cause gout, a painful inflammation of the toes and joints. A safe intake of nucleic acid is about 2 grams per day. Since the daily intake of yeasts in the diet totals less than 0.5 gram, a harmful excess of uric acid from this source is unlikely unless

MAJOR REFERENCE: Single Cell Protein. II. S. R. Tannenbaum and D. I. Wang, eds. (Cambridge, Mass.: M.I.T. Press, 1975).

*For autolyzed yeast, a hydrolyzed brewer's yeast, see p. 613.

yeast is consumed as a major source of protein in the diet, perhaps 20 grams or more, and this is not the way yeast is used as a food additive.

Clinical studies with human subjects indicate that an intake of 20 grams of yeast may result in nausea and diarrhea. At these high levels of consumption, there can be a sensitization to yeast.

In the 1970s there was interest in growing torula yeast on petroleum rather than using carbohydrate sources. The safety of this practice has been examined primarily because petroleum products may contain small amounts of cancer-inducing chemicals. Yeast grown on petroleum hydrocarbons has been dried and fed to rats to provide 30 percent of the protein; in 90-day studies, there were no significant effects of these yeasts on appearance, behavior, growth, food intake, blood components (including blood uric acid, though rats can metabolize uric acid and degrade it further, in contrast to humans), or on various pathological measures (including microscopic examination of the tissues and organs for precancerous changes) as compared with animals on a casein (see p. 507) diet. Proteins prepared from such yeasts have been fed to rats as the sole source of protein (20 percent of the diet). During the 100-day study there was no effect on deaths of the animals or on their general condition and behavior, but there was some occurrence of calcium deposits in the kidney. The level of feeding in this study would be equivalent to well over a thousand times the average human intake, adjusted for body weight.

A study has been conducted in which mice were given an injection of some 30,000 cancer cells. The mice were then tested for effects of feeding a yeast preparation as a food supplement. The tumor growth over the next four weeks was reduced, apparently because the yeast in the diet antagonized the establishment and early growth of the cancer. Yeasts grown on petroleum fractions have also been tested to see what effect they might have on tumor growth. In one test, rats were treated with a cancer-inducing chemical and fed yeast at a level of 17 to 27 percent of the diet (up to 80 percent of the protein) for seven months. The yeast did not influence growth or food consumption, nor did it affect the cancer development or incidence in the treated rats.

ASSESSMENT: Yeasts are useful nutrient supplements. They have been used for centuries and are indispensable for certain

fermentation processes, such as making bread or brewing. No safety problem appears to come from growing yeast on either carbohydrate by-products or on petroleum. The use of yeast as a food additive poses no hazard to the consumer at levels now used or likely to be used in foods in the future. However, smoked yeast has not been adequately tested for safety, and there are reasons for concern about possible health hazards from the wood smoking (see p. 625).

RATING: S for all yeasts except smoked yeast; ? for smoked yeast.

AUG 94

CNUM=2927

E 1

U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

YEAST
~~ADD~~ AUTOLYSATE

S#: 977046755
SP#: 2927
PE: NEW
S#: 0365
MA#: 0365
AS#: 0365
HUMAN CONSUMPTION: 7.1045 MG/KG BW/DAY/PERSON
MARKET DISAPPEARANCE: 8383333.333 LBS/YR
MARKET SURVEY: 87
JECFA: 87
JECFA ADI: 87
JECFA ESTABLISHED: 940215
LAST UPDATE: 940215
DENSITY: LOGP:

STRUCTURE CATEGORIES: B7

MPONENTS:

NONYMS: YEAST, AUTOLYZED
AUTOLYZED YEAST

EMICAL FUNCTION: F

CHNICAL EFFECT: FLAVOR ENHANCER
FLAVORING AGENT OR ADJUVANT
ANTICAKING AGENT OR FREE-FLOW AGENT
DRYING AGENT
HUMECTANT
MALTING OR FERMENTING AID
LEAVENING AGENT
NUTRIENT SUPPLEMENT

R REG NUMBERS:

NIMUM TESTING LEVEL: 3

MMENTS: NO TOX DATA

DCNUM=2931

U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE~~ADDITIVE~~ YEASTS

LS# : 977030399
ASP# : 2931
/PE : NEW
LS# : 0333
SMA# :
LAS# :
HUMAN CONSUMPTION: 35.8757 MG/KG BW/DAY/PERSON
MARKET DISAPPEARANCE: 42333333.333 LBS/YR
MARKET SURVEY: 87
JECFA:
JECFA ADI:
JECFA ESTABLISHED:
LAST UPDATE: MG/KG BW/DAY/PERSON

V: DENSITY: LOGP:

STRUCTURE CATEGORIES: B7

IMPOMENTS:

/NONYMS: LEVURE

CHEMICAL FUNCTION: G

TECHNICAL EFFECT:
LEAVENING AGENT
MALTING OR FERMENTING AID
FLAVOR ENHANCER
FLAVORING AGENT OR ADJUVANT
NUTRIENT SUPPLEMENT
ANTICAKING AGENT OR FREE-FLOW AGENT
DRYING AGENT
HUMECTANT

PR REG NUMBERS: 160.105 160.185 160.145

MINIMUM TESTING LEVEL: 3

REMARKS:

AUG 94

E 1

CNUM=1569

U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

YEASTS
DRIED

S#: 977009361 HUMAN CONSUMPTION: 5.3954 MG/KG BW/DAY/PERSON
SP#: 1569 MARKET DISAPPEARANCE: 6366666.666 LBS/YR
PE: ASP MARKET SURVEY: 87
S#: 1186 JECFA:
MA#: JECFA ADI:
AS#: JECFA ESTABLISHED: 931115 MG/KG BW/DAY/PERSON
LAST UPDATE:

DENSITY: LOGP:

STRUCTURE CATEGORIES: C23 C24

COMPONENTS:

NONYMS: DRIED YEAST

CHEMICAL FUNCTION: D

TECHNICAL EFFECT: LEAVENING AGENT
FLAVOR ENHANCER
FLAVORING AGENT OR ADJUVANT
NUTRIENT SUPPLEMENT
SOLVENT OR VEHICLE
MALTING OR FERMENTING AID

REG NUMBERS: 172.896 139.122 139.155
137.235 139.115

NUM TESTING LEVEL: 3

COMMENTS:

EX 4A: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE RAT OR MOUSE STUDIES

STUDY: 5A COMPLETENESS: A RANKING FACTOR: 3.596E-4
SPECIES: RAT LEL: >15000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
TESTS:

COMMENTS: HIGHEST DOSE TESTED

>CNUM=1569

>X 4C: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE STUDIES

STUDY: 5A COMPLETENESS: A RANKING FACTOR: 3.596E-4
SPECIES: RAT LEL: >15000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS: SEE BOX 4A

>X 6: HIGHEST OBSERVED NO-EFFECT LEVEL IN SPECIES OF BOX 4C

STUDY: 5A COMPLETENESS: A LEL: >NONE MG/KG BW/DAY
SPECIES: RAT HNEL: 15000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS:

>X 9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

STUDY: 5A COMPLETENESS: A SOURCE: FOOD COSMET TOXICOL 9:787-800
SPECIES: CHRONIC RODENT YEAR: 1971
SPECIES: RAT LEL: > MG/KG BW/DAY
DURATION: 728 DAYS HNEL: 15000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS: YEASTS WERE GROWN ON HYDROCARBONS

STUDY: 29 COMPLETENESS: C SOURCE: ASP 001569
SPECIES: SUBCHRONIC RODENT YEAR: 1976
SPECIES: RAT LEL: > MG/KG BW/DAY
DURATION: 90 DAYS HNEL: 30000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS:

STUDY: 30 COMPLETENESS: C SOURCE: ASP 001569
SPECIES: SUBCHRONIC RODENT YEAR: 1976
SPECIES: RAT LEL: > MG/KG BW/DAY
DURATION: 90 DAYS HNEL: 30000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS:

STUDY: 4 COMPLETENESS: A SOURCE: FOOD COSMET TOXICOL 8:499-507
SPECIES: SUBCHRONIC RODENT YEAR: 1970
SPECIES: RAT LEL: > MG/KG BW/DAY
DURATION: 365 DAYS HNEL: 15000 MG/KG BW/DAY
EFFECTS: NO EFFECTS
COMMENTS:

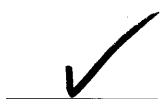
NOSB NATIONAL LIST FILE CHECKLIST

LIVESTOCK

MATERIAL NAME: **Aspirin**

CATEGORY: Synthetic Allowed

Complete?: _____



NOSB Database Form



References



MSDS (or equivalent)

Date file mailed out: 9/22/94



TAP Reviews from: William Zimmer
Marta Engel

Supplemental Information:

MISSING INFORMATION: _____

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material

Aspirin

Type of Use:

Crops;



Livestock;

Processing

TAP Review by:

1.

William Zimmer DVM

2.

Marta Engel DVM

3.

Comments/Questions:

My Opinion/Vote is:

Signature

Date

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: Sept 22

Name of Material: ASPIRIN

Reviewer Name: William A. Zimmer D.V.M.

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic

Please comment on the accuracy of the information in the file:

Accurate

This material should be added to the National List as:

☒ Synthetic Allowed ☐ Prohibited Natural

or, ☐ This material does not belong on the National List because:

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

For animal use under veterinary supervision for short term control of inflammation and body temperature. Documentation of dosage and duration of treatment should be required. Suggest a 3 day milk ~~re~~ withdrawal and 30 day meat withdrawal after cessation of treatment.

Signature William A. Zimmer D.V.M. Date 3/12/95

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: Sept. 22

Name of Material: ASPIRIN

Reviewer Name: MARTA W. ENGEL DVM

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic

Please comment on the accuracy of the information in the file:

OK to the best of my knowledge.

This material should be added to the National List as:

☒ Synthetic Allowed ☐ Prohibited Natural

or, ☐ This material does not belong on the National List because:

Very biodegradable. Byproduct similar to naturally occurring compounds in nature. Shouldn't be a problem for human health.

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

Any additional comments or references?

Signature Marta W. Engel DVM Date 10/24/94

I found out the following information from Mary Thomas, aspirin specialist, at Dow Chemical Company (517) 636-1000:

Aspirin is made from orthohydroxybenzoic acid that is acetylated with acetic anhydride.

Salicylic acid is naturally occurring in willow and bridal wreath (Spirea) as the glucoside Salicin. When hydrolyzed you get acetylsalicylic acid. It has been used since 1750's to treat arthritis by using the plant isolates.

Aspirin is used as a standard of biodegradation. It is eliminated within 8 hrs in the urine. The $\frac{1}{2}$ life in blood is $\frac{1}{2}$ hr. ^{as salicylic acid.}

Aspirin \rightarrow salicylic acid \rightarrow standard of biodegradation \rightarrow rapidly degraded.

Aspirin is a monographed material. It must meet U.S.P. standards of manufacture.

ie. Aspirin U.S.P. is a legal entity.

It is labeled for use in cattle on brands that I carry in my veterinary practice.

I found out the following information from Mary Thomas, Aspirin Specialist, at Dow Chemical Company (517) 636-1000:

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Aspirin \rightarrow salicylic acid \rightarrow standard of biodegradation \rightarrow rapidly degraded.

Aspirin is a monographed material. It must meet U.S.P. standards of manufacture.

i.e. Aspirin U.S.P. is a legal entity.

It is labeled for use in cattle on brands that I carry in my veterinary practice.

NOSB Materials Database

4.

Identification

Common Name **Aspirin** **Chemical Name** Acetylsalicylic Acid
Other Names
Code #: CAS 50-78-2 **Code #: Other** NIOSH # VO0700000
N. L. Category Synthetic Allowed

Chemistry

Composition $2\text{-CH}_3\text{COOC}_6\text{H}_4\text{COOH}$ **Family**
Properties White crystalline powder with a slight characteristic odor. Boiling point 140 C, Melting point 133 C, specific gravity 1.40. Slight solubility.
How Made Raw material made in China, Poland, Mexico and Dow Chemical. Compounded into boluses by various Animal Health companies in the U>S> Also made in France, Spain and Turkey. Made from orthohydroxy benzoic acid that is acetylated with acetic anhydride.

Use/Action

Type of Use Livestock
Use(s) Health care. To decrease inflammation and lower body temperature in fevers.
Action Inhibits the production of Prostaglandins by inhibiting the enzyme, cyclo-oxygenase, that biosynthesizes prostaglandin.

Combinations

Status

OFPA 2118 (c) (1) (B)(i) synthetic on exemption list as medication
N. L. Restriction Category 2: TAP review before National List

EPA, FDA, etc FDA: new animal drug requiring NADE when intended for use in animals?

Registration Registered for cattle: Animal Health Associates, 240 grain aspirin.

Directions

Safety Guidelines Caution - may cause irritation

State Differences

Historical status Plant isolates in use since the 1750's.

International status

OFPA Criteria

2119(m)1:chem. inter. none known.

2119(m)2: toxicity Rapidly biodegrades.

2119(m)3:manufacture Not likely to be a problem. Rapidly degrades to salicylic acid which is naturally occurring in nature. (ME)

2119(m)4:humans LD50 (Oral - Rat)(Mg/Kg) - 1000, LD50 (Oral - Mouse)(Mg/Kg) - 815, LD50 (IPR - Rat)(Mg/Kg) - 390. No carcinogenicity shown. Dust may irritate eyes. Eliminated within 8 hours in the urine as salicylic acid.

2119(m)5: biology Not likely to be a problem. Only small amounts are used. No major impact likely. (ME)

2119(m)6:alternatives Appropriate homeopathic medicines relative to the specific complaint and symptoms.

2119(m)7:compatible

References

Kyavu,-N.; Ansay,-M., "Posology and toxicity of aspirin in domestic animals." Posologie et toxicite de l'aspirine chez les animaux domestiques. Ann-Med-Vet. Bruxelles : Corps enseignant de la faculte de medicine veterinaire, Universite de Liege. Oct 1982. v. 126 (6) p. 493-497. CN: DNAL 41.8-AN78, LA: French

Anderson,-J.G.; Oehme,-F.W.; Moore,-W.E. "The effect of oral salicylate (aspirin) on hematologic and biochemical profiles of dairy cattle." VM-SAC-Vet-Med-Small-Anim-Clin. Bonner Springs, Kan., Veterinary Medicine Publishing Co. Sept 1979. v. 74 (9) p. 1329-1332. ill. CN: DNAL 41.8-M69

Gingerich,-A; Baggot,-J-D; Yeary,-R-A "Pharmacokinetics and dosage of aspirin in cattle". J-Am-Vet-Med-Assoc, Nov 15, 1975, 167 (10): 945-948. Ref. CN: DNAL 41.8-AM3

MSDS for ASPIRIN

Page 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: ASPIRIN

FORMULA: 2-CH₃COOC₆H₄COOH

FORMULA WT: 180.16

CAS NO.: 50-78-2

NIOSH/RTECS NO.: VO0700000

COMMON SYNONYMS: ACETYLSALICYLIC ACID

PRODUCT CODES: 0033

EFFECTIVE: 06/30/86

REVISION #02

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 1 SLIGHT

FLAMMABILITY - 1 SLIGHT

REACTIVITY - 0 NONE

CONTACT - 1 SLIGHT

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT

PRECAUTIONARY LABEL STATEMENTS

CAUTION

MAY CAUSE IRRITATION

DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
ACETYLSALICYLIC ACID	90-100	50-78-2

3 - PHYSICAL DATA

BOILING POINT: 140 C (284 F) VAPOR PRESSURE(MM HG): N/A

MELTING POINT: 133 C (271 F) VAPOR DENSITY(AIR=1): N/A

SPECIFIC GRAVITY: 1.40
(H₂O=1)EVAPORATION RATE: N/A
(BUTYL ACETATE=1)SOLUBILITY(H₂O): SLIGHT (0.1 TO 1 %) % VOLATILES BY VOLUME: 0

APPEARANCE & ODOR: WHITE CRYSTALLINE POWDER WITH A SLIGHT CHARACTERISTIC ODOR.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL OR ORDINARY FOAM.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

TOXIC GASES PRODUCED

CARBON MONOXIDE, CARBON DIOXIDE

5 - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): 5 MG/M3 (PPM)

TOXICITY: LD50 (ORAL-RAT)(MG/KG) - 1000

LD50 (ORAL-MOUSE)(MG/KG) - 815

LD50 (IPR-RAT)(MG/KG) - 390

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE: DUST MAY IRRITATE EYES.

TARGET ORGANS: NONE IDENTIFIED

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: NONE INDICATED

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION.

EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES.

6 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: MOISTURE

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS ABOVE 5 MG/M3, A DUST/MIST RESPIRATOR IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

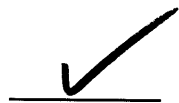
NOSB NATIONAL LIST FILE CHECKLIST

LIVESTOCK

MATERIAL NAME: **Biotin**

CATEGORY: Synthetic Allowed

Complete?: 3/22



NOSB Database Form



References



MSDS (or equivalent)

Date file mailed out: 9/22/94



TAP Reviews from: Richard Krengel
William Zimmer

Supplemental Information:

MISSING INFORMATION: many criteria not addressed.

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material BIOTIN

Type of Use: _____ **Crops;** ☒ **Livestock;** _____ **Processing**

TAP Review by:

1. Richard Krengel
2. William Zimmer
- 3.

Comments/Questions:

My Opinion/Vote is:

Signature _____ **Date** _____

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: SEPT. 22

Name of Material: BIOTIN

Reviewer Name: William A. Zimmer D.V.M.

Is this substance Natural or Synthetic? Explain (if appropriate)
Synthetic form is only commercially available form that is generally able to be supplemented into feed.

Please comment on the accuracy of the information in the file:
Accurate. Also available in solution.

This material should be added to the National List as:

☒ Synthetic Allowed ☐ Prohibited Natural

or, ☐ This material does not belong on the National List because:

Are there any restrictions or limitations that should be placed on this material by use or application on the National List? *No restrictions as an additive to feed rations or orally administered preparations. Documentation of dosage and administration, short term, for any injected preparations. Suggest 30 day meat withdrawal due to injection site of liquid preparations.*
Any additional comments or references?

Expand status to include use in crops as a foliar or plant food and possibly for preparations to treat stressed crops.

Signature William A. Zimmer, D.V.M. Date 3/12/95

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: SEPT. 22

Name of Material: BIOTIN

Reviewer Name: Richard Krenzel

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic

Please comment on the accuracy of the information in the file:

All correct

This material should be added to the National List as:

☒ Synthetic Allowed ☐ Prohibited Natural

or, ☐ This material does not belong on the National List because:

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

Any additional comments or references?

Signature

R Krenzel

Date

10/19/94

NOSB Materials Database

3.

Identification

Common Name	Biotin	Chemical Name	D-Biotin
Other Names	Hexahydro-2-oxo-1H-THIENO[3,4-D]IMIDAZOLE-4-PENTANOIC Acid		
Code #: CAS	00058-85-5	Code #: Other	NIOSH #: XJ9088200
N. L. Category	Synthetic Allowed		

Chemistry

Composition	C10H16N2O3S	Family
Properties	White crystalline powder. Melting point 232 C, appreciable solubility.	
How Made		

Use/Action

Type of Use	Livestock
Use(s)	feed additive

Action

Combinations

Status

OFPA 2118 (c) (1) (B)(i) synthetic on exemption list as vitamin

N. L. Restriction Category 3- TAP review before National List

EPA, FDA, etc FDA: allowed in animal feed under 582.5159 (GRAS)

Registration

Directions

Safety Guidelines Caution - May cause irritation.

State Differences

Historical status

International status

NOSB Materials Database

4.

OFPA Criteria

2119(m)1:chem. inter.

2119(m)2: toxicity

2119(m)3:manufacture

2119(m)4:humans No carcinogenicity. No LD50 on MSDS.

2119(m)5: biology

2119(m)6:alternatives

2119(m)7:compatible

References

Bitsch,-R.; Toth-Dersi,-A.; Hoetzel,-D., "Biotin deficiency and biotin supply." Ann-N-Y-Acad-Sci. New York, N.Y. : The Academy. June 24, 1985. v. 447 p. 133-139. CN: DNAL 500-N484

Whitehead,-C.C. "Assessment of biotin deficiency in animals." Ann-NY -Acad-Sci. New York, N.Y. : The Academy. June 24, 1985. v. 447 p. 86-96. ill. CN: DNAL 500-N484

Paul,-P.K. "Effect of nutrient toxicities in animals and man: biotin Includes insects." Nutritional disorders. Miloslav Rechcigl, editor-in-chief. West Palm Beach, CRC Press, 1978. v.1 p. 47-58. CN:DNAL RC620.A1N83

MSDS for D-BIOTIN

Page 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: D-BIOTIN

 FORMULA: C₁₀H₁₆N₂O₃S

CAS NO.: 00058-85-5

FORMULA WT: 244.31

NIOSH/RTECS NO.: XJ9088200

COMMON SYNONYMS: HEXAHYDRO-2-OXO-1H-THIENO[3,4-D]IMIDAZOLE-4-PENTANOIC ACID

PRODUCT CODES: C272

EFFECTIVE: 03/11/86

REVISION #01

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 1 SLIGHT

FLAMMABILITY - 1 SLIGHT

REACTIVITY - 1 SLIGHT

CONTACT - 1 SLIGHT

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

CAUTION

MAY CAUSE IRRITATION

DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
NOT APPLICABLE		

3 - PHYSICAL DATA

BOILING POINT: N/A

VAPOR PRESSURE(MM HG): N/A

MELTING POINT: 232 C (450 F)

VAPOR DENSITY(AIR=1): N/A

SPECIFIC GRAVITY: N/A

EVAPORATION RATE: N/A

 (H₂O=1)

(BUTYL ACETATE=1)

 SOLUBILITY(H₂O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: 0

APPEARANCE & ODOR: WHITE CRYSTALLINE POWDER.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP: N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

TOXIC GASES PRODUCED

NITROGEN OXIDES, SULFUR DIOXIDE, CARBON MONOXIDE, CARBON DIOXIDE

5 - HEALTH HAZARD DATA

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE: PROLONGED CONTACT MAY CAUSE SKIN SENSITIZATION.

TARGET ORGANS: NONE IDENTIFIED

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: NONE INDICATED

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION.

EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES.

6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, SUNLIGHT AND ULTRAVIOLET LIGHT

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG BASES, FORMALDEHYDE, NITROUS ACID, CHLORAMINE-T

DECOMPOSITION PRODUCTS: OXIDES OF NITROGEN, OXIDES OF SULFUR, CARBON MONOXIDE, CARBON DIOXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION
TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION
CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS
HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, RUBBER GLOVES ARE
RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE
AREA.

STORE BELOW 40 C.

KEEP CONTAINERS OUT OF SUN AND AWAY FROM HEAT.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

NOSB NATIONAL LIST FILE CHECKLIST

LIVESTOCK

MATERIAL NAME: Iodine

CATEGORY: Synthetic Allowed

Complete?: 3/22



NOSB Database Form

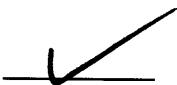


References



MSDS (or equivalent)

Date file mailed out: 9/22/94



TAP Reviews from: Richard Krenzel
William Zimmer

Supplemental Information:

MISSING INFORMATION: _____

NOSB/NATIONAL LIST COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material

Iodine

Type of Use: _____ Crops; ☒ Livestock; _____ Processing

TAP Review by:

1.

Richard Krenzel

2.

William Zimmer

3.

Comments/Questions:

My Opinion/Vote is:

Signature

Date

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: Sept. 22

Name of Material: IODINE

Reviewer Name: William A. Zimmer DVM

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic. Only natural source with appreciable available iodine levels is kelp. Suggest listing kelp as a preferred natural feed source of iodine.

Please comment on the accuracy of the information in the file:

Accurate.

This material should be added to the National List as:

☒ **Synthetic Allowed** ☐ **Prohibited Natural**

or, ☐ This material does not belong on the National List because:

Are there any restrictions or limitations that should be placed on this material by use or application on the National List? *Synthetic forms in feeds as listed levels of NRC only. Kelp as an acceptable natural source.*

Any additional comments or references?

Many test dips and topical antiseptics contain iodine formulations. This area of products should also be addressed with relative risk of milk supply contamination in the case of test dips. Topical iodine preparations are highly effective, low contaminant risk.

Signature William A. Zimmer DVM **Date** 3/12/95

USDA/TAP REVIEWER COMMENT FORM

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Attach additional sheets if you wish.

This file is due back to us within 30 days of: Sept 22

Name of Material: Iodine

Reviewer Name: Richard Krenzel

Is this substance Natural or Synthetic? Explain (if appropriate)

Synthetic

Please comment on the accuracy of the information in the file:

All correct

This material should be added to the National List as:

☒ Synthetic Allowed ☐ Prohibited Natural

or, ☐ This material does not belong on the National List because:

Are there any restrictions or limitations that should be placed on this material by use or application on the National List?

Any additional comments or references?

Signature

Richard Krenzel

Date

10/17/94

NOSB Materials Database

3.

Identification

Common Name	Iodine	Chemical Name	
Other Names			
Code #: CAS	7553-56-2	Code #: Other	NIOSH #: NN1575000
N. L. Category	Synthetic Allowed		

Chemistry

Composition	I	Family	
Properties	Violet Black crystals, metallic luster, characteristic odor. Boiling point 184 C, melting point 114 C, specific gravity 4.93. Negligible solubility.		
How Made	Synthetic, although kelp is a natural source.		

Use/Action

Type of Use	Livestock
Use(s)	feed additive. Forms approved by FDA: calcium iodate, calcium idobehenate, cuprous iodide, 3,5-diodosaliclic acid, ethylenediamine dihydroiodide (EDDI), Potassium iodate, potassium iodide, sodium iodate, sodium iodide, thymol iodide. iodized salt not less than 0.007%. Can be used in topical teat dips.

Action

Combinations

Status

OFPA 2118 (c) (1) (B)(i) synthetic on exemption list as mineral.

N. L. Restriction Category 3- review by TAP before National List

EPA, FDA, etc FDA: GRAS for nutritional purposes.

Registration

Directions

Safety Guidelines Poison Danger, causes severe irritation, do not get in eyes, on skin.

State Differences

Historical status

International status

NOSB Materials Database

4.

OFPA Criteria

2119(m)1:chem. inter.

2119(m)2: toxicity

2119(m)3:manufacture

2119(m)4:humans LD50(Oral - Rat)(G/Kg) - 14, LD50(Oral - Mouse)(G/Kg) - 22. No report of carcinogenicity. Inhalation and ingestion are harmful and may be fatal. Highly corrosive.

2119(m)5: biology

2119(m)6:alternatives

2119(m)7:compatible

References

see attached sheet.

IODINE REFERENCES

AU: Akerib,-M

TI: Iodine toxic to young animals. [Chickens]

SO: Worlds-Poultry-Sci-J, Jan/Mar 1971, 27 (1): 35-37.

CN: DNAL 47.8-W89

AU: Anke,-M.; Groppe,-B.; Krause,-U.; Angelow,-L.; Arnhold,-W.; Masaoka,-T.; Barhoum,-S.; Zervas,-G.
 TI: Normal manganese, zinc, copper, iron, iodine, molybdenum, nickel, arsenic, lithium and cadmium supply dependent on the geological origin of the site and its effects on the status of these elements in wild and domestic ruminants.

SO: Trace elements in man and animals 6 / edited by Lucille S. Hurley, ... [et al.]. New York : Plenum Press, c1988. p. 663-665.

CN: DNAL QP534.I5-1987

AU: Chambon,-C.; Chastin,-I.

TI: Animal studies of iodized oils: iodine disposition and physiological effects.

SO: NATO-ASI-Ser-Ser-A-Life-Sci. New York, N.Y. : Plenum Press. 1993. v. 241 p. 159-167.

CN: DNAL QH301.N32

AU: McHargue,-J.S.; Young,-D.W.; Calfee,-R.K.

TI: The effect of certain fertilizer materials on the iodine content of important foods.

SO: J-Am-Soc-Agron. Madison, Wis. : American Society of Agronomy. July 1935. v. 27 (7) p. 559-565.

CN: DNAL 4-AM34P

AB: Crude Chile nitrate, raw rock phosphate, and limestone rocks may contain enough iodine to influence the iodine content of forage crops and vegetables when applied in adequate amounts to soils deficient in iodine. 2. Plants may absorb relatively large amounts of iodine without producing any signs of toxicity. 3. It is a simple matter to increase the iodine content of forage crops and vegetables by adding appropriate amounts of potassium iodine to the soil in which they are grown. 4. Tests by dialyses and the separation of various protein fractions of a sample of corn that contained a relatively large amount of iodine showed that this element was present in organic combinations and therefore in suitable form for assimilation by livestock and man.

AU: Underwood,-E.J.

TI: Trace metals in human and animal health.

SO: J-Hum-Nutr. London, E. Smith-Gordon. Feb 1981. v. 35 (1) p. 37-48. map, charts.

CN: 389.8-N959

AB: Abstract: The recognition that trace elements are important in human nutrition dates back to the ancient Greeks, but scientific work really began in the 19th century with the discovery of such phenomena as copper in pigmented compounds, the inverse relationship of goiter and occurrence of iodine, and low blood iron in anemic women. Great strides were made during the 1930's, exemplified by the identification of cobalt as the cure for a disease of cattle in Australia, which was found to have significance in many other parts of the world. Copper, manganese, and zinc were soon added to the list of essential elements. Molybdenum and selenium followed in the 1950's. Chromium was found to be associated with glucose intolerance in children suffering from protein-energy malnutrition. These elements, among others, have been extensively studied to reveal the associated metalloenzymes and their functions, the metabolism in cells and tissues, the manifestations of deficiency, amounts needed for health, interactions, and possible toxicity.

AU: Vidor,-G.I.

TI: Iodine toxicity in man and animals Includes iodine content of food, feed and medication.

SO: Nutritional disorders. Miloslav Rechcigl, editor-in-chief. West Palm Beach, CRC Press, 1978. v. 1 p. 219-282. ill.

CN: DNAL RC620.A1N83

MSDS for IODINE

Page 1

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: IODINE

FORMULA: I

CAS NO.: 7553-56-2

PRODUCT CODES: 5189,5479,2211,2212,2208

EFFECTIVE: 09/03/86

FORMULA WT: 126.90

NIOSH/RTECS NO.: NN1575000

REVISION #02

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM

HEALTH - 3 SEVERE (POISON)

FLAMMABILITY - 0 NONE

REACTIVITY - 2 MODERATE

CONTACT - 3 SEVERE (CORROSIVE)

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

POISON DANGER

MAY BE FATAL IF SWALLOWED OR INHALED

CAUSES SEVERE IRRITATION

DO NOT GET IN EYES, ON SKIN, ON CLOTHING.

AVOID BREATHING DUST. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

SAF-T-DATA(TM) STORAGE COLOR CODE: WHITE (CORROSIVE)

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
IODINE	90-100	7553-56-2

3 - PHYSICAL DATA

BOILING POINT: 184 C (363 F) VAPOR PRESSURE(MM HG): 0.31

MELTING POINT: 114 C (237 F) VAPOR DENSITY(AIR=1): 9.0

SPECIFIC GRAVITY: 4.93 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)SOLUBILITY(H2O): NEGLIGIBLE (LESS THAN 0.1 %) % VOLATILES BY VOLUME: 100
APPEARANCE & ODOR: VIOLET BLACK CRYSTALS, METALLIC LUSTER,
CHARACTERISTIC ODOR.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP) N/A

FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %

FIRE EXTINGUISHING MEDIA

USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

UNUSUAL FIRE & EXPLOSION HAZARDS

5 - HEALTH HAZARD DATA

PEL AND TLV LISTED DENOTE CEILING LIMIT.

THRESHOLD LIMIT VALUE (TLV/TWA): 1.0 MG/M3 (0.1 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): 1 MG/M3 (0.1 PPM)

TOXICITY: LD50 (ORAL-RAT)(G/KG) - 14

LD50 (ORAL-MOUSE)(G/KG) - 22

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

EFFECTS OF OVEREXPOSURE

INHALATION AND INGESTION ARE HARMFUL AND MAY BE FATAL.

VAPORS MAY BE IRRITATING TO SKIN, EYES, AND MUCOUS MEMBRANES.

INHALATION OF VAPORS MAY CAUSE SEVERE IRRITATION OR BURNS OF THE RESPIRATORY SYSTEM, PULMONARY EDEMA, OR LUNG INFLAMMATION.

CONTACT WITH SKIN OR EYES MAY CAUSE SEVERE IRRITATION OR BURNS.

PROLONGED EYE CONTACT MAY CAUSE PERMANENT DAMAGE TO THE CORNEA AND BLINDNESS MAY OCCUR.

INGESTION MAY CAUSE IRRITATION AND BURNING TO MOUTH AND THROAT, GASTRO-INTESTINAL PAIN, NAUSEA, VOMITING, FEVER, SHOCK, BLOOD IN URINE, AND DIFFICULTY BREATHING. CHRONIC EFFECTS OF OVEREXPOSURE MAY INCLUDE DAMAGE TO LUNGS, THYROID GLAND, AND BLOOD.

TARGET ORGANS

RESPIRATORY SYSTEM, EYES, SKIN, CENTRAL NERVOUS SYSTEM, CARDIOVASCULAR SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

CALL A PHYSICIAN.

IF SWALLOWED, DO NOT INDUCE VOMITING; IF CONSCIOUS, GIVE WATER, MILK, OR MILK OF MAGNESIA.

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION, SUNLIGHT

INCOMPATIBLES: STRONG REDUCING AGENTS, AMMONIA, AMMONIUM SALTS,
ACETYLENE, ACETALDEHYDE, COMBUSTIBLE MATERIALS, ALUMINUM, CHEMICALLY
ACTIVE METALS, POWDERED METALS, CARBIDES, AMMONIUM HYDROXIDE

7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND
COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.

DISPOSAL PROCEDURE

DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL
ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: D002, D003 (CORROSIVE, REACTIVE WASTE)

8 - PROTECTIVE EQUIPMENT

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET
TLV REQUIREMENTS.

RESPIRATORY PROTECTION: NONE REQUIRED WHERE APPROPRIATE VENTILATION
CONDITIONS EXIST. IF THE TLV IS EXCEEDED, A SELF-
CONTAINED BREATHING APPARATUS IS ADVISED.

EYE/SKIN PROTECTION: SAFETY GOGGLES, UNIFORM, APRON, RUBBER GLOVES ARE
RECOMMENDED.

9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: WHITE (CORROSIVE)

SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. STORE IN CORROSION-PROOF AREA.
KEEP CONTAINERS OUT OF SUN AND AWAY FROM HEAT.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)

